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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,787	02/06/2006	Kenichi Wakui	274940US0PCT	9324

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EXAMINER	
HAILEY, PATRICIA L	
ART UNIT	PAPER NUMBER
1793	

NOTIFICATION DATE	DELIVERY MODE
01/27/2010	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/542,787	WAKUI, KENICHI	
	Examiner	Art Unit	
	PATRICIA L. HAILEY	1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *November 13, 2009*.

2a)☐ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *7-10 and 14-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *7-10 and 14-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Applicant's remarks and amendments, filed on November 13, 2009, have been carefully considered. No claims have been canceled or added; claims 7-10 and 14-18 remain pending in this application.

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Applicants' Priority Document was filed on July 20, 2005.

Withdrawn Rejection

The 103(a) rejection of claims 7-10 and 14-18 as being unpatentable over Japanese Patent No. 11-180902 in view of Friedrich (U. S. Patent No. 3,669,877) and Miller et al. (U. S. Patent No. 4,340,465), stated in the previous Office Action, has been withdrawn in view of Applicant's persuasive argument traversing this rejection.

The Japanese Patent does not teach or suggest the claimed steam to hydrocarbon mass ratio ranging from 0.1 to 1.

New Ground of Rejection

The following New Ground of Rejection is being made in view of the Examiners' reconsideration of the references of record, and in view of the newly discovered

reference to Suzukawa et al. (U. S. Patent No. 3,551,513); the text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

2. Claims 7-10 and 14-18 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Japanese Patent No. 11-180902 in view of Friedrich (U. S. Patent No. 3,669,877), Miller et al. (U. S. Patent No. 4,340,465), and Suzukawa et al. (U. S. Patent No. 3,551,513).

The Japanese Patent teaches a process for the catalytic cracking of a hydrocarbon to produce lower olefins (paragraph [0003]), wherein the reaction takes place in the presence of a catalyst supporting a rare earth element in an amount of 0.4-20, expressed in terms of atomic ratio to aluminum in a crystalline aluminosilicate zeolite (as recited in **claims 9 and 10**). See the Abstract of the Japanese Patent.

Exemplary feedstocks include hydrocarbon raw materials having from 2 to 30 carbon atoms (as recited in **claim 16**), such as paraffins (e.g., ethane, propane, butane, pentane, hexane, naphtha, and gas oil, as recited in **claim 17**); see paragraph [0005] of the Japanese Patent.

The zeolite component (examples of which include ZSM-5 and ZSM-11, **claim 18**) of the catalyst preferably exhibits a SiO_2/Al_2O_3 ratio of from 25-800, most preferably 100-300 (as recited in **claim 7**), and examples of the rare earth component

include lanthanum, cerium, praseodymium, neodymium, samarium, gadolinium, dysprosium (as recited in **claim 8**), etc. See paragraph [0006] of the Japanese Patent.

In paragraph [0009] of the Japanese Patent, cracking conditions such as a fixed bed or fluid bed (synonymous with "fluidized bed", as recited in **claim 7**), a steam supply of 0.1-1 wt. % in the hydrocarbon feed, and temperatures ranging from about 350°C to about 780°C are depicted.

The Japanese Patent does not specifically disclose that the fluid bed ("fluidized bed") "permits continuous regeneration of the catalyst". However, Friedrich teaches that it is known in the art of fluidized bed catalytic reactions to employ the catalysts in a continuous regeneration operation, see col. 1, lines 12-18. One of ordinary skill in the art would reasonably expect that the fluid bed disclosed in the Japanese Patent would permit continuous regeneration of the catalyst, in view of Applicants' definition of this phrase at page 7, lines 27-33 of the Specification. Further, it would have been obvious to one of ordinary skill in the art to employ a fluidized bed permitting continuous regeneration of the catalyst, which leads to lower attrition rates for the catalyst, reduces catalyst loss, and maximizes the performance characteristics of the reaction system, as taught by Friedrich, see col. 1, lines 28-53.

Additionally, the Japanese Patent does not specifically disclose the pressure conditions, steam to hydrocarbon mass ratio (also recited in **claim 14**), catalyst to hydrocarbon mass ratio, or the contacting time (also recited in **claim 15**) recited in **claim 7**.

Miller et al. is relied upon to show conventional process conditions for catalytically cracking a hydrocarbonaceous feedstock with a catalyst comprising rare earth-containing zeolites (col. 7, lines 23-37 and col. 8, lines 15-44).

Exemplary cracking conditions include a temperature from about 425°C to about 650°C, a pressure ranging from about 0 to about 6 atmospheres (0 to 607.95 kPa), a catalyst to hydrocarbon weight ratio (considered equivalent to "catalyst to hydrocarbon mass ratio" in **claim 7**) of from about 2 to 15, and residence or contact times from about 0.3 to 10 seconds (**claims 7 and 15**). See col. 3, lines 21-44 of Miller et al.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of the Japanese Patent by incorporating therein the conventional catalytic cracking conditions of Miller et al., motivated by the references' common teachings regarding the catalytic cracking of hydrocarbons, in the presence of crystalline aluminosilicate zeolites containing rare earth components, as well as the references' comparable process conditions.

Suzukawa et al. is also relied upon to show conventional process conditions for preparing olefins from liquid hydrocarbon by thermal cracking with a bed of solid particles fluidized by a fluidizing gas, said conditions including a temperature of from 600 to 1000°C, a contact time of from 0.05 to 3 seconds, and a feed ratio by weight of steam to liquid hydrocarbon ranging from 0.1 to 10 (**claim 7**), preferably from 0.4 to 0.6 (**claim 14**). See col. 2, lines 22-37 and 55-58 of Suzukawa et al., as well as col. 4, lines 35-47.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the teachings of the Japanese Patent by incorporating therein the conventional catalytic cracking conditions of Suzukawa et al., motivated by the references' common teachings regarding the catalytic cracking of hydrocarbons, as well as the references' comparable process conditions.

Response to Arguments

In response to Applicant's arguments that the Japanese Patent "provides no teachings or description of operational details of any fluidized bed system", the Examiner respectfully submits that the reference, in paragraph [0009] therein, discloses exemplary cracking conditions such as a fixed bed or fluid bed, and that "fluid bed" is considered synonymous with "fluidized bed". Therefore, either type of bed would be suitable for the process of the Japanese Patent, and the skilled artisan would have been motivated to select either type of bed. However, the Examiner respectfully submits that Friedrich was and is relied upon for its teachings that it is known in the art of fluidized bed catalytic reactions to employ the catalysts in a continuous regeneration operation; the skilled artisan would reasonably expect that the fluid bed disclosed in the Japanese Patent would permit continuous regeneration of the catalyst, in view of Applicants' definition of this phrase at page 7, lines 27-33 of Applicants' Specification, and also at col. 1, lines 28-33 of Friedrich.

Applicant has not convincingly shown that, in the process disclosed by the Japanese Patent, the fluid bed ("fluidized bed") process is more beneficial than the fixed bed process.

Although the Japanese Patent does not disclose a steam to hydrocarbon mass ratio comparable to that instantly claimed, this deficiency is considered cured by the teachings of Suzukawa et al., as set forth above.

Further, although the Japanese Patent does not disclose a catalyst to hydrocarbon mass ratio comparable to that instantly claimed, this deficiency is considered cured by the teachings of Miller et al., as discussed in the above-stated rejection, which is relied upon for its teachings regarding conventional catalytic cracking process conditions, which include a catalyst to hydrocarbon weight ratio of from about 2 to 15.

In response to Applicant's arguments regarding the "disadvantages inherent to the use of fluidized bed systems", the Examiner respectfully submits that Applicant has not convincingly shown that the claimed invention exhibits unexpected results, commercial success, or satisfies a long-felt need which was recognized, persistent, and not solved by others skilled in the art (MPEP 716.01-716.04).

For these reasons, Applicant's arguments have been considered, but are not persuasive.

Declaration under 37 CFR 1.132

3. The Declaration under 37 CFR 1.132 filed November 13, 2009, is insufficient to overcome the 103(a) rejection of claims 7-10 and 14-18 based upon Japanese Patent No. 11-180902 in view of Friedrich (U. S. Patent No. 3,669,877), Miller et al. (U. S. Patent No. 4,340,465), and Suzukawa et al. (U. S. Patent No. 3,551,513) as set forth in this Office action because:

1. The Declaration fails to identify the Declarant, and his/her curriculum vitae (items (1) through (3) therein).

2. The Declaration fails to identify the attached "copy of several pages of text from the book identified as" (item (5) therein).

3. The Declaration fails to indicate that the English language translations of the excerpts from said book are certified English translations, i.e., there is no statement of verification of the English language translations.

4. The Declaration is unsigned, and undated.

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PATRICIA L. HAILEY whose telephone number is

(571)272-1369. The examiner can normally be reached on Mondays-Fridays, from 7:00 a.m. to 3:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached on (571) 272-1233. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group 1700 Receptionist, whose telephone number is (571) 272-1700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/PATRICIA L. HAILEY/
Primary Examiner, Art Unit 1793
January 20, 2010